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NEW SPECIES OF CAPE IRIDACEAE

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ABSTRACT

Gladiolus delpierrei, *Ixia thomasiae* and *Babiana virginea* are new species of Iridaceae-Ixioideae. All three were discovered after 1970 in the southwestern part of the Cape Province, South Africa. Detailed descriptions are followed by discussion of their relationships to other species. Chromosome counts are given for *I. thomasiae* ($2n = 20$) and *B. virginea* ($2n = 14$).

UITTREKSEL

NUWE SPESIES VAN KAAPSE IRIDACEAE

Gladiolus delpierrei, *Ixia thomasiae* en *Babiana virginea* is nuwe spesies van Iridaceae-Ixioideae. Al drie was ontdek na 1970 in die suidwes Kaap-Provinsie, Suid-Afrika. Beskrywings word gevolg deur 'n bespreking van hulle verwantskappe met andere species. Chromosoomgetalle vir *I. thomasiae* ($2n = 20$) en *B. virginea* ($2n = 14$) aangegee.

INTRODUCTION

The Iridaceae is an important family in southern Africa in terms of number of species. Centred in the Cape Floristic Region, it occurs throughout southern Africa, with significant concentrations in the Natal and Transvaal Drakensberg as well as the southwestern Cape. It is the fifth largest family in the flora of southern Africa (Goldblatt, 1978) after Compositae, Aizoaceae, Leguminosae and Liliaceae, and consists of some 840 species in 44 genera. The Iridaceae of southern Africa comprise more than 55 % of the estimated total of 1 460 species in the family as a whole (Goldblatt, unpubl.).

The family is well understood at the generic level in Africa, and there are modern revisions for almost half the genera. In spite of this, unknown species continue to come to light, sometimes forgotten amongst the incertae in herbaria, and sometimes discovered for the first time in remote or under-collected parts of southern Africa. The present paper deals with species in the latter category. The new species described here were all discovered since 1970. All belong to genera for which there are good modern revisions so that there is no question that they may have been collected before, and now lie misidentified in some herbarium. Since so many Iridaceae bloom infrequently, and even then have a short flowering period, it is likely that more unknown species will come to light from time to time,

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even in well collected areas as indicated by examples such as those of *Gladiolus lapeirousioides* (Goldblatt, 1971a), *Moraea indecora* (Goldblatt, 1976) and *Moraea loubseri* (Goldblatt, 1977a; 1977b). Not unexpectedly the three species described here all have a very limited distribution, and in fact each is known from only single populations of relatively small size. Extremely localised species such as these are fairly frequent in the predominantly arid southwest part of southern Africa, and especially in the southwestern Cape.

Chromosome counts were made for two of the three species. Root tip squashes were made following pretreatment in 0,003 M hydroxyquinoline for six hours, fixation in Carnoy's solution and hydrolysation in 10% HC1 for five minutes. Root tips were stained in lacto-propionic orcein. In both species counts were obtained from corms taken from the type collection.

SPECIES DESCRIPTIONS

BABIANA

Babiana thomasiae Goldblatt, sp. nov.

Cormus ca. 15 mm in diametro, tunicis brunneis, supra extensis. *Caulis* brevis 10–30 mm longus, simplex. *Folia* 8–9, plicata, erecta, ad 300 mm longa, multi-pilosa. *Bractea* exterior ad 80 mm longa, herbacea pilosa; interior 40–45 mm longa. *Flores* 2–4, bilabiati, albi, flavo maculati, odorati: *tubus perianthii* 60–65 mm longus; *tepalum superius* ca. 40 mm longum, erectum; inferiora tria 30–70 mm longa. *Stamina* unilateralia; antherae 9–11 mm longae. *Ovarium* glabrum; rami styli 5 mm longi.

Type: South Africa, Cape, Blomfontein farm, Roggeveld escarpment, between Calvinia and Middelpos, *Goldblatt s.n.* (MO *2 419 601*, holotype; K, NBG, PRE, S, isotypes). **(Fig. 1).**

Corm about 15 mm in diameter, ovoid, deep seated with tough light brown tunics. *Stem* fairly short, reaching 10–30 mm above ground, simple. *Leaves* 8–9, plicate, ensiform, erect, to 300 mm long, bearing many very fine hairs. Spikes 40–60 mm long, 2–4 flowered. *Bracts* lanceolate, heavily pilose, herbaceous, with attenuate brown apex, lowermost 80 mm or longer, upper 20–40 mm; inner bract 40–45 mm similar to outer but minutely bi-apiculate. *Flower* zygomorphic, ± bilabiate, white with pale yellow markings on lower tepals; sweetly scented; *perianth tube* 60–65 mm long, almost straight, widened very gradually to apex, 2 mm in diameter at base, 6–7 mm at throat; *outer tepals* slightly larger than inner with upper tepal to 40 mm, held apart from others and lower three 30–50 mm long, forming a lip. *Stamens* inserted 6–7 mm below top of perianth tube, unilateral; filaments 15 mm long, anthers 9–11 mm, pale yellow. *Ovary* oblong, glabrous ± 5 mm long; style reaching to top of anthers with branches 5 mm long, ± linear with expanded apices. *Capsule* 12–15 mm long, rotund. *Seeds* large, 3 mm in diameter, globose, dark brown. *Chromosome number* $2n = 14$.

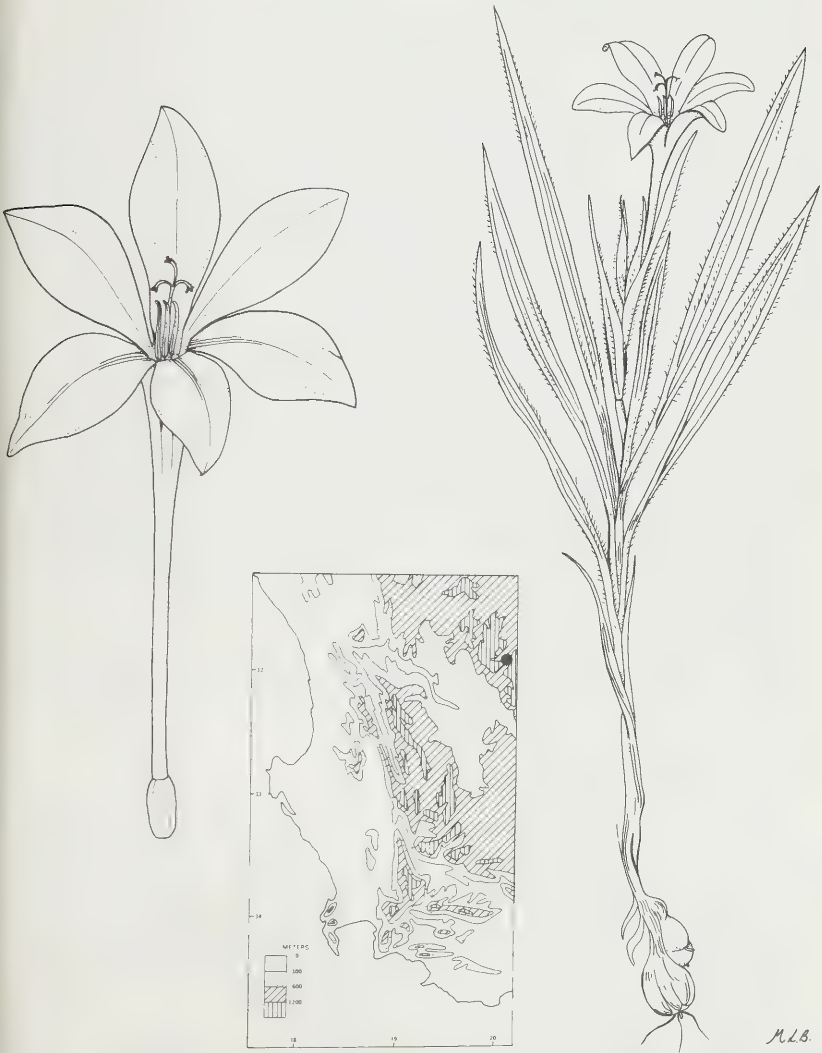

FIG. 1.
Morphology and distribution of *Babiana virginea* Goldbl.—whole plant approx. × 0,5; flower life size.

Flowering time: late September.

Distribution: local on shale outcrops on hills on the Roggeveld escarpment. (Fig. 1).

Babiana virginea was discovered in 1974 by Klas Hiemstra and Margaret Thomas while on a collecting trip from Kirstenbosch Botanic Gardens. Corms brought back to Kirstenbosch flowered in the following year and the plants multiplied to the extent that in 1976 I was able to make the type collection from an ample number of specimens thriving in the Kirstenbosch nursery. Margaret Thomas brought the species to my attention, being sure it was undescribed from her knowledge of *Babiana*, gained while working with G. J. Lewis, who monographed the genus several years ago (Lewis, 1959).

The species is very distinctive in its large white, long-tubed flower, short, rather lax, few flowered spike and softly pilose leaves and bracts. It appears to be most closely related to the long-tubed species of section *Babiana*, in particular to the yellow, shorter tubed *B. vanzyliae* and to the purple, rather narrow leafed *B. sambucina*. Both these species occur in the same general area of the western Karoo in the Calvinia and Sutherland districts. *Babiana virginea* is one of the largest flowered species of the genus, and with a strong and pleasant scent may well be worth horticultural attention. Its chromosome number, $2n = 14$, and karyotype are typical of *Babiana* (Goldblatt, 1971b). With 18 of the 63 species now counted and with no karyotypic variation recorded except for B chromosomes in a few species, the genus can be regarded as fairly well understood cytologically.

SPECIES EXAMINED

South Africa, CAPE—3120 (Williston): West of Blomfontein farm 21,2 m West of Middelpos, Roggeveld escarpment (CC), *Goldblatt s.n.* (K, MO, NBG, PRE, S); *Hiemstra 601* (NBG).

GLADIOLUS

Gladiolus delpierrei Goldbl. sp. nov.

Planta 0,4–0,45 alta, simplex. *Cormus* globosus, tunicis fibrosis tenuibus. *Folium productum* solitarium, basale, lineare, marginibus et costis incrassatis. *Caulis* folia vaginantia dua ferens. *Spica* secunda, floribus 4–7; bracteae herbaceae, exterior 13–17 mm, interior brevior, bifida. *Flores 4*–7, bilabiati, cremei, flavo punctati; *tubus perianthii* 70 mm longus; *tepalum superius* galeatum, 24 mm longum, lateralia extensia, inferiora tria labiata. *Stamina* unilateralia; antherae 6 mm longae. *Stylus* ramosus ad apicem antherarum.

Type: South Africa, Cape, Cedarberg Sneeuberg, *Delpierre 456* (NBG). **(Fig. 2).**

Plants 0,4–0,45 m tall, unbranched. *Corm* globose, with shrunken remains of corms of several previous seasons attached below; tunics of fine fibres extending

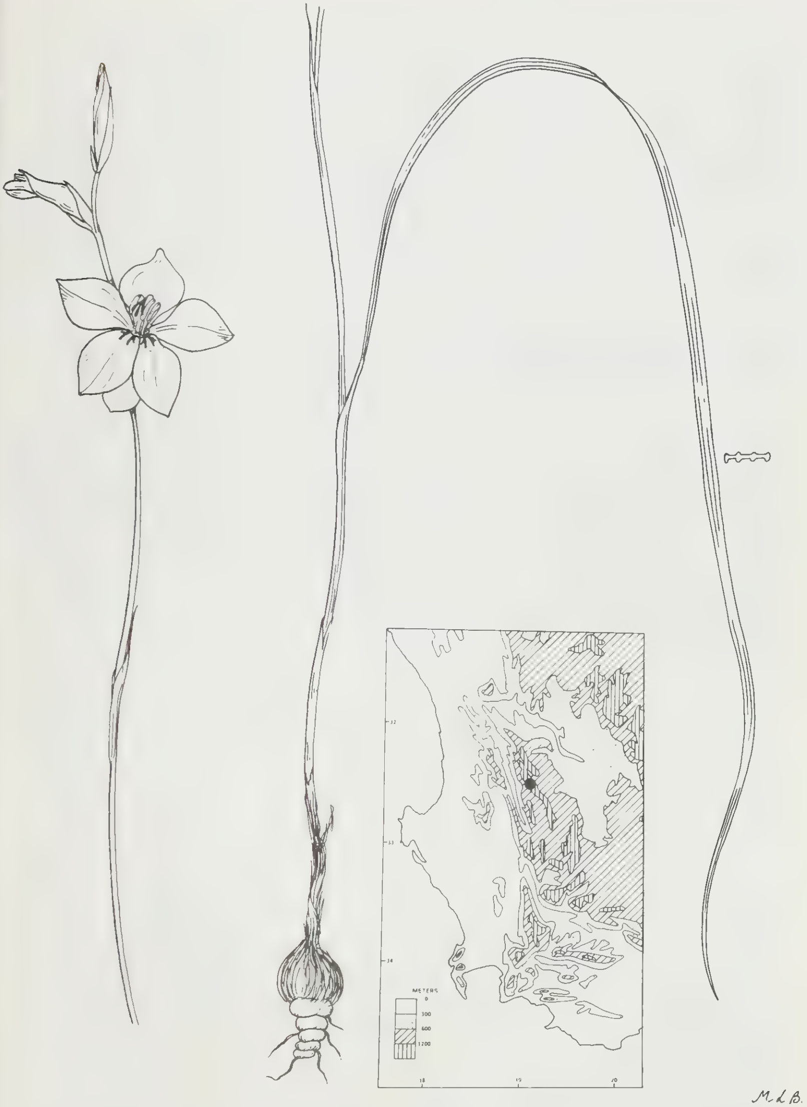

FIG. 2.
Morphology and distribution of *Gladiolus delpierrei* Goldbl.—plant and flower ×0,5.

upwards in a neck. *Produced leaf* solitary, basal, linear, about as long as the stem; 4–5 mm at widest point, with 2 or 3 prominent veins and slightly thickened margins. *Stem* simple, bearing two sheathing leaves; the lower 70–80 mm long, upper 35–40 mm, both free for about 30 mm. *Spike* secund, 4–7 flowered. *Bracts* herbaceous, darker at apex, outer larger, 13–17 mm long, inner smaller and slightly shorter with bifid apex. *Flower* bilabiate, cream coloured, nectar guide at base of the two lower lateral tepals yellow with two red lines; *perianth tube* 7 mm long, widening towards apex; *tepals* unequal, upper arching over the style and stamens, ca 24 mm long, upper laterals outspread, lower laterals reflexed in lower third at nectar guide and forming a lip; lower tepal concealed under lower laterals. *Stamens* unilateral, arcuate; filaments 13 mm long, anthers contiguous, 6 mm long. *Style* slender, arching over the stamens and branching near apex of anthers. *Capsule* and seed not known.

Flowering time: summer, collected only in January.

Distribution: known only from a south-facing slope of Cedarberg Sneeuberg at 1 900 m (Fig. 2).

Gladiolus delpierrei is known from only one site on the upper south slopes of Sneeuberg in the Cedarberg. It grows in typical Cape sandstone soil amongst Restionaceae and in places where summer moisture is available from cloud condensation. The species is named in honour of its collector, Dr Georges Delpierre, Professor of Biochemistry at the University of the Western Cape at Bellville. Dr Delpierre is the co-author of the excellent book on winter-growing *Gladiolus* species of South Africa (Delpierre & du Plessis, 1974) and has extensive knowledge and interests in geophytic Iridaceae and Amaryllidaceae, especially *Gladiolus*.

The rare montane *Gladiolus delpierrei* seems allied to the small group of slender single-leafed species including *G. debilis, G. cylindraceus,* and *G. oreocharis*. It would appear most closely related to the latter, also a montane, summer-flowering species which extends from the Hex River Mountains to the Cedarberg. The differences between *G. delpierrei* and *G. oreocharis* are several, in flower, leaf and corm characters. In particular, *G. oreocharis* does not have the conspicuous old corms attached to the corm base so striking in *G. delpierrei*. The stem leaves of *G. oreocharis* have much longer free portions while it also has larger bracts, a much longer perianth tube and has white to pink or mauve flowers.

The discovery of *Gladiolus delpierrei* brings the total number of species of the genus in southern Africa to 104 (Lewis, Obermeyer & Barnard, 1972) of which 99 are endemic. The total number of species of *Gladiolus* in the Cape Floristic Region is now 72.

SPECIES EXAMINED

South Africa, CAPE–3219 (Wuppertal): Cedarberg Sneeuberg, 1900 m (CA), *Delpierre s.n.* (NBG *100743*), *Delpierre 456* (NBG).

IXIA

Ixia thomasiae Goldbl. sp. nov.

Planta gracilis, ad 0,8 m alta. *Cormus* ca 20 mm in diametro, ovoideus, tunicis fibrosis crassis. *Caulis* erectus, filamentosus, pauciramosus. *Folia* 3, inferiora dua basales, ad 0,6 m longa, marginibus nervisque incrassatis. *Spica* pendula, bracteae membranaceae, atrovenosae, exterior ca 10 mm longa saepe trifurcata; interior 1 mm brevior bifurcata. *Flores* penduli, subrosei; *tubus perianthii* 7 mm longus, infundibuliformis; *tepala* subaequalia, 20-25 mm longa. *Stamina* erecta, symmetrica; antherae 6 mm longae. Stylus ad 15 mm longus, antheras excedens.

Type: South Africa, Cape, Blomfontein farm, Roggeveld escarpment between Calvinia and Middelpos, *Goldblatt 4268* (MO, holotype; K, NBG, PRE, S, isotypes). **(Fig. 3).**

Plants tall and slender, reaching 0,5–0,8 m, usually growing in clumps. *Corm* to 20 mm in diameter, ovoid, tunics coarsely fibrous, outer layers dark brown; extending upward in a neck. *Stem* erect, wiry, usually bearing 2–3 branches. *Leaves* 3, the two lower basal, linear, at least two-thirds the length of the stem, 3–5 mm wide; margins and midrib much enlarged so that two grooves on each surface run the length of the leaf; upper leaf sheathing the stem for half its length with free portion short. *Spike* pendulous bearing up to 10 flowers. *Outer bract* membranous and pale brown above with conspicuous dark veins, ca 10 mm long, obtuse, usually 3-notched at apex, inner bract similar, about 1 mm shorter, and 2-notched. *Flowers* pendulous, pale pink-mauve; *perianth tube* 7 mm long, narrow at base and widening abruptly at the throat; *tepals* subequal, 20–25 mm long, outspread, narrowly elliptical, obtuse. *Stamens* erect, filaments 4–5 mm long, inserted at base of outer tepals, anthers 6 mm, arranged symmetrically around the style. *Style* to 15 mm long filiform; straight, branching above apex of the anthers, branches 1–1,5 mm, expanded apically. *Capsule* about 4 mm long, three-lobed, surface roughly papillate; *seeds* irregularly globose, to 2 mm in diameter, 2–4 per loculus. *Chromosome number* $2n = 20$.

Flowering time: mid-September—October.

Distribution: Roggeveld escarpment between Middelpos and Calvinia in mountain renosterbos—*Danthonia* veld (Fig. 3).

Ixia thomasiae belongs in section *Morphixia* (Lewis, 1964) and is related to the primitive species of this section, especially the smaller flowered *I. marginifolia*, *I. capillaris* and *I. rapunculoides*, and all have in common wiry stems, stellate flowers with a relatively short perianth tube. *Ixia thomasiae* is distinctive in its leaf, unique in *Ixia*, with its thickened margins and midrib and narrow longitudinal grooves. The pendulous inflorescence is also unusual, although encountered in some forms of *Ixia rapunculoides*.

This species is known from one locality only, on the farm Blomfontein on the edge of the Roggeveld escarpment between Middelpos and Calvinia. The plants grow in well-drained stony soil, usually amid tufts of tall danthoniod grasses. In cultivation plants are shorter, and the leaves somewhat broader, suggesting that height and leaf shape in wild plants are to some extent environmental responses. Chromosome number, $2n = 20$ is typical of *Ixia* (Goldblatt, 1971), 12 of the 45 (Lewis, 1962) species now being known cytologically.

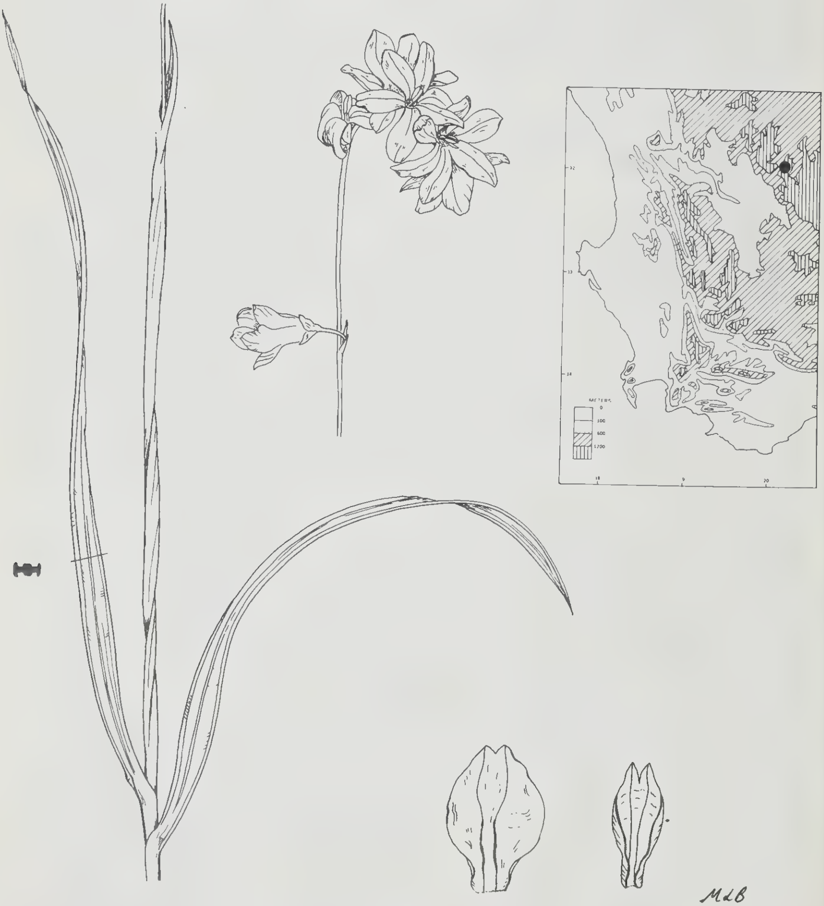

FIG. 3.
Morphology and distribution of *Ixia thomasiae* Goldbl.—plant and inflorescence ×0,5; bracts ×2.

Ixia thomasiae is named in honour of Margaret Thomas, an enthusiastic student and grower of the native flora of the southwestern Cape. Her special interest in Iridaceae has frequently been of great assistance to me and other botanists studying the family. She has discovered many rare and unknown species including two described in this paper, *Ixia thomasiae* and *Babiana virginea*, both of which she brought to my notice as worth close attention.

SPECIES EXAMINED

South Africa—3120 (Williston): Blomfontein farm, Roggeveld escarpment w of Middelpos on Calvinia road (CC), *Thomas s.n.* (NBG *93822*), *Thomas s.n.* (in fruit) (NBG *104707*), *Goldblatt 4268* (K, MO, NBG, PRE, S).

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